

RECORDS AND DESCRIPTIONS OF ORTHOPTERA FROM NORTH-WEST AFRICA.

By B. P. UVAROV.

(Plate I.)

THE present paper is based mainly on a collection of Orthoptera made by Lord Rothschild and Dr. E. Hartert on their several expeditions to different parts of Sahara, but I thought it convenient to include also a few records from some other sources, particularly from a collection of Dr. Auguste Cros, Mascara, Algeria, and from the British Museum collection. A considerable part of the first-mentioned collection has been already worked out by I. Bolivar and the results have been published in this magazine,¹ but I cannot agree with all his identifications after a study of the specimens named by him, because of the reasons stated under corresponding species; the species recorded by Bolivar under the names, in my opinion, correct, are not mentioned by me. As regards the part of the collection which came to me unnamed, I do not think it necessary to record some more common, widely distributed, and well-known species, but I include all those which are of interest on account of synonymy or distribution, besides those which are new to science or insufficiently known. As may be seen from the paper, there exists a good deal of confusion in systematics and synonymy even of some very common species, and the collections studied presented good opportunities for revising some cases of that kind. Several very interesting novelties described in the paper give us a new proof that the fauna of Orthoptera of N.W. Africa is still very inadequately known.

My most sincere thanks are due to Lord Rothschild and Dr. Hartert for giving me the opportunity to study their interesting collection, and to Dr. A. Cros for the collection from Mascara.

The types of new species described in the paper are in the British Museum.

The report on the collection would not be half as complete without illustrations, and I am most grateful to Lord Rothschild who provided for the same.

FAM. **MANTIDAE.**1. *Iris oratoria* (L.).

(Text-fig. 1 B.)

Batna, Algeria, 27.viii.1910 (British Museum); Azazga, Kabylie, 17.ix.1920 (Rothschild and Hartert).

The typical locality for this species is Algiers, because Linné described it from the specimens received by him from Brander, Swedish Consul at Algiers from 1753 to 1765 (see Catal. of the Linnean Specimens, etc., by B. D. Jackson, Suppl. to the *Proc. Lin. Soc. of London for 125th Session*, 1912-13, p. 10); this fact should be kept in mind in case it would be found necessary to separate

¹ NOVITATES ZOOLOGICAE, xx. 1913, pp. 603-15.

the western Mediterranean form from the eastern one, which seems to be somewhat larger and more heavily marked on the wings; for that latter the subspecific name *fenestrata* Brullé may be used. I do not propose, however, this division just now, as the material at my disposal is too scanty.

I. oratoria has been recorded by previous authors from many localities in N.W. Africa, but mostly from the coastal regions, while records from Sahara are likely to apply to the next species, which has not been recognised hitherto.

2. *Iris deserti* sp. n.

(Text-fig. 1 A; Plate I, figs. 7, 8, 9, 10.)

1913. *Iris oratoria* var. *polystictica* Bolivar l.c., p. 604, no. 3 (*nec* Fisch. Waldheim!).

♀. Distinctly smaller than *I. oratoria* (L.). *Head* strongly transverse; its width, including the eyes, subequal to the length of the metazona of pronotum. Facial scutellum more than twice as broad as its maximal height; its margins all

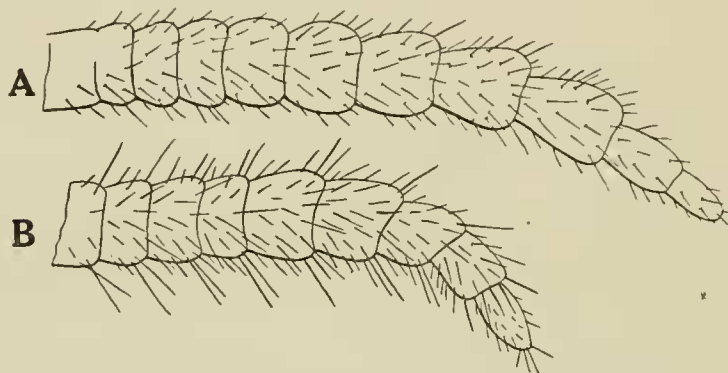


FIG. 1.—Male cerci of two species of *Iris*. A, *I. deserti*, sp. n., paratype. B, *I. oratoria* (L.), from Batna, Algeria. $\times 40$.

distinct, the upper one more raised than the lateral ones; the angles scarcely tuberculate; the surface with two submedian tubercles just above the middle, a low median carinula in the upper half and two subobliterate, closely approximate tubercles near the middle of the lower margin. Tubercles between the base of antennae and the eyes very low, almost obliterate. Ocelli distinctly elliptical; the middle one transverse; the two lateral ones longer than broad. Vertex distinctly concave, with deep sutures, which are very distinct in the occiput, as well. *Pronotum* about two and half times as long as its maximal width; prozona half of the length of metazona, distinctly narrowed anteriorly; the coxal dilatation very distinct and the metazona behind it is narrowed rather more suddenly than in *I. oratoria*; the median keel very feeble; margins not at all denticulate. *Elytra* somewhat less than half again as long as the pronotum, subcoriaceous; their apex elliptical. *Wings* distinctly shorter than the elytra, slightly longer than broad. *Supra-anal plate* elliptical, distinctly longer than broad, with a feeble median carinula. The armure and granulation of the front legs very much the same as in *I. oratoria*.

General coloration very pale ochraceous; the inner side of the first joint of

front tarsi, and the apices of spines of the front legs are brown. *Wings* pale sulphurous, not transparent; the anterior part somewhat brownish with hyaline spots; the hind part with but a small bluish-black spot surrounded externally by the concentrically disposed small spots which are not coloured, but simply hyalinous.

♂ (paratype). The head still more distinctly transverse than in the female; the facial scutellum about three times as broad as its maximal height; ocelli strongly elliptical, their longer diameter about twice of the shorter one; vertex strongly concave. Cerci long, 11-jointed, composed of elongate joints. Supra-anal plate longer than broad. Elytra of the same texture as in *I. oratoria*, extending to the apex of the abdomen. Coloration very pale ochraceous; wings faintly sulphurous; their front margin faintly brownish, with small hyalinous spots; the typical bluish-black spot quite small; the concentric spots very small and indistinct, mostly hyalinous, or very faintly brownish.

	♀ (type)	♂♂ (paratypes)
	mm.	mm.
Length of body	37	35-38
Width of the head with eyes	6	5-6
Length of prozona	3.5	3-3.5
„ „ metazona	7	6.5-7
Width of the coxal dilatation of pronotum	4	3-3.5
„ „ metazona in its middle	3	2.25-2.75
Length of elytra	14	24.5-30
„ „ wings	10.5	22.5-?
Width „ „	8.5	12-?
Maximal diameter of the spot on the wings	3.5	3-?

One female type and two male paratypes are from Aïn Guettara, north of In Salah, 12-14.iv.1912 (Hartert and Hilg.); one male paratype from Aïn Sefra, South Oran, 1-18.v.1913 (Rothschild and Hartert).

The specimens of *Iris* from Aïn Guettara (together with others from S. Oued Mya, Algerian Sahara, which I have not seen) attracted the attention of Bolivar by their very pale coloration with the typical pattern on the wings very imperfectly developed, and he referred them to the insect described by Fischer Waldheim as *Mantis polystictica*, from "Dauria," which he regards as a mere colour variety of the common *I. oratoria*. A closer examination of those specimens revealed, however, a fair number of purely morphological differences between them and the typical *I. oratoria*, which I believe to be quite sufficient for separating them specifically. In describing this species I did not accept for it the name *polystictica* F.W., as Bolivar does, because Fischer Waldheim does not mention in his description nor figures the characters which are of real specific value, and his species should remain as a doubtful synonym of *I. oratoria* until the type, or at least topotypes, may be studied; in any case, there is not much probability in the new Saharan species being the same as the Eastern Siberian one.

As regards the differences between *I. deserti* and *I. oratoria*, they are as follows: the head in the new species is much more transverse, which is especially noticeable in the shape of the facial scutellum (compare figs. 10 and 11 of the plate); the ocelli are perfectly round in *I. oratoria* and distinctly elliptical in *I. deserti*, which is especially well marked in the male; vertex in *I. oratoria* is almost flat, with indistinct sutures, while in *I. deserti* it is decidedly concave, with

the sutures deep ; tubercles between the bases of antennae and the eyes are well developed in *I. oratoria* and obsolescent in *I. deserti* ; margins of the pronotum in both sexes of *I. deserti* are unarmed, while they are very distinctly denticulate in the female of *I. oratoria* ; supra-anal plate in both sexes of *I. deserti* is somewhat more elongated than in *I. oratoria* ; male cerci in *I. oratoria* are 9-jointed, with the joints transverse (compare figs. 1 A and B). The difference in the coloration of the hind wings is obvious from the description and must not be ignored, although the development of the typical pattern may be, to a certain extent, liable to variations.*

One male of the new species from Aïn Sefra differs from the rest by somewhat larger dimensions, which are given in the last column of the table of measurements (the wings in it are not spread and therefore their measurements are not given), and by distinctly greenish general coloration ; in its morphological characters, however, it shows no difference from the specimens from typical locality.

It is not impossible that some of the previous records of *I. oratoria* from Sahara really belong to *I. deserti*, which seems to replace the Mediterranean species in the desert.

3. *Sphodromantis viridis* (Forsk.).

Biskra, 30.x.1920, 1 ♂.

4. *Empusa egena* (Charp.).

Hamman R'irha, 30.v.1913 (Rothschild and Hartert).

5. *Blepharopsis mendica* (F.).

Aïn Sefra, S. Oran, 1-18.v.1913 ; Biskra (Rothschild and Hartert).

Krauss (*Denkschr. Akad. Wiss. Wien*, lxxi. 1902, p. 12 of sep. reprint) suggested that this species should be called *B. monstrosa* (Forsk.), but, apart from the indication of Giglio-Tos (*Bull. Soc. Ent. Ital.*, xlviii. 1916, p. 69) that the priority of Forskal's name is doubtful, both his book and that by Fabricius bearing the same date (1775), this name cannot be employed because *Gryllus monstrosus* of Drury (*Ill. Exot. Entom.*, 1773) makes *Gryllus monstrosus* of Forskal not acceptable.

FAM. TETTIGONIIDAE.

6. *Tettigonia savignyi* (Lucas).

Hamman R'irha, June 1913, 1 ♂ (Rothschild and Hartert).

7. *Uromenus innocentii lobata* (Sauss.).

Aïn Sefra, S. Oran, 1-18.v.1913, 1 ♂, 1 ♀, and some larvae (Rothschild and Hartert).

All the specimens show distinctly lobate lower margins of the pronotal lobes, which is characteristic for the Oran subspecies (see Vosseler, *Beitr. Faun. Biol. Orth. Alger. Tunes.*, p. 400).

* I am inclined to think that the variability of the wing-pattern in *I. oratoria* is rather geographical than individual.

8. *Odontura algerica* Br. Watt. (?).

Hamman R'irha, 30.v.1913, 1 ♀ (Rothschild and Hartert).

I cannot be quite sure in my identification of the single female specimen.

FAM. **ACRIDIDAE.**9. *Platypterna geniculata* Bol.

1913. *Platypterna geniculata* I. Bolivar, *l.c.*, p. 608, no. 9.

N. El-Golea, Alger. Sahara, 2 ♂♂, 2 ♀♀ (paratypes).

Not less than six species of this difficult genus have been described from the Sahara, four of them in Bolivar's paper, and practically all founded on single specimens. Out of the four species of Bolivar, I was able to examine the paratypes of *P. geniculata* only, as all other types have been retained by that author and are in the Madrid Museum now. My study of *P. geniculata* makes me to observe that the key to species given by Bolivar (*l.c.*, p. 610) is very misleading, as this species is included in the division of key with the fastigium "medio haud carinatum," while in the description of the species (p. 608) it is said "caput supra subcarinatum" (as it really is); foveolae of the vertex are also described in the diagnosis as "elongatae, marginatae" while according to the key they should "subrepletae" in this species and *P. rothschildi*, and "elongatae, marginatae, laeves" in *P. tibialis* and *P. intermedia*. On the whole, it seems to me that the key is far from being satisfactory, and the more so that very little is known about the individual variability of the characters used in it.

The unnamed part of the Lord Rothschild collection contains another species of *Platypterna*, from Aïn Sefra, S. Oran, which does not quite agree with all existing descriptions, but I abstain from describing one more new species on a single specimen.

10. *Chorthippus albolineatus* (Lucas).

1849. *Oedipoda albolineata* Lucas, *Explor. Alger.*, iii. p. 38, no. 66; iv. pl. 4, fig. 6. *Stenobothrus pulvinatus* auctor., nec Fisch. Waldh. 1846.

Mascara, v-vi.1922 (A. Cros).

I cannot agree with the authors who regarded the Algerian *Chorthippus* as conspecific with the European *Ch. pulvinatus* F.W. The first to start this confusion has been Brunner v. Wattenwyl (*Prodromus Europ. Orth.*, p. 124), who obviously has not seen the Algerian species, as he does not mention Algeria amongst the localities whence he has seen *Ch. pulvinatus*, and he has sunk the species of Lucas on the strength of its figure and not very lucid description. It is quite inconceivable, on the other hand, that Finot (*Ann. Soc. Ent. Fr.*, lxiv. 1895, pp. 433-4) accepted this synonymy in spite of the differences of the Algerian species from *Ch. pulvinatus* stated by himself quite correctly and clearly in a note after the description (which latter, by the way, is evidently based not on the Algerian insect, but simply taken, with some slight alterations, from his *Faune de la France, Insectes Orthoptères*, pp. 125-6). All subsequent authors relied upon Brunner's authority and never entered into criticism of the synonymy established by him.

In fact, *Ch. albolineatus* is closely allied to *Ch. pulvinatus*, and I failed to find any substantial difference between them in the venation, but the male

subgenital plate in the Algerian insect is of the same type as in *Ch. albomarginatus*, and not horizontally produced as it is in *Ch. pulvinatus*; this character is, of course, of specific value. In its general *habitus*, *Ch. albolineatus* is also more like *Ch. albomarginatus* than *Ch. pulvinatus*. Dimensions of *Ch. albolineatus* are as follows :

	♂♂ mm.	♀♀ mm.
Length of body	16-18	21-23
„ „ pronotum	3.5-4	4-4.5
„ „ elytra	12.5-14	15-16
„ „ hind femora	11-12	13.5-14

The occurrence of *Ch. pulvinatus* in Algeria and other parts of N.W. Africa should be regarded as not yet proved, as all existing records are based on the presumption that it is identical with *Ch. albolineatus* and must apply to the latter.

11. *Eremogryllus hammadæ* Krauss.

Aïn Sefra, South Oran, 1-18.v.1913, 2 ♀♀ (Rothschild and Hartert).

One of the specimens is reddish ochraceous, with irregular reddish-brown spots and dots; another is very pale ochraceous from above, with the sides reddish ochraceous, and the lateral lobes of the pronotum with chocolate-brown spots at the upper margin which reminds somewhat of the colour-form common in some species of *Doclostaurus*, described as var. *castaneopicta* Kr. of *D. anatolicus*.

Previous records of this interesting insect are : Gafsa, Tunis; El-Mreir; Ouargla to Ghardaia; Oued Mزاب to Oued Nsa (all in Algerian Sahara).

12. *Notopleura rothschildi* sp. n.

(Plate I, figs. 3, 4.)

♂ (type). *Antennae* strongly flattened throughout, not longer than the head and pronotum together. *Head* distinctly prominent above the pronotum; face strongly reclinate; frontal ridge between the antennae strongly prominent and in profile convex, below them perfectly straight; near the ocellum feebly impressed, below it flat, widened and disappearing towards the clypeus; fastigium of the vertex deeply impressed, almost twice as long as it is broad, elongato-pentagonal, with the apex acute and lateral margins slightly convergent behind; foveolae of the vertex elongato-trapezoidal, somewhat narrowed anteriorly, not deeply impressed, punctured, with the margins obtuse. *Pronotum* as in *N. saharica* Krauss. *Elytra* extending a little beyond the hind knees; mediastinal area distinctly dilated near the base, reaching to the apical third; scapular area reaching almost to the apex of the elytron, strongly dilated in its apical third, with sparse, oblique veinlets; the first radial vein almost straight, in more than the basal half thick, then suddenly attenuate, but thickened again near the apex which is somewhat bent backwards; the second radial vein thick throughout, though distinctly irregular in the apical half, somewhat bent backwards; inter-radial area broad, regularly transversely reticulate, except in the apical part which is divided by a false vein; discoidal area distinctly broader than the scapular area in its broadest part, with irregular, sparse, transverse reticulation; the false vein between the apical halves of the hind radial and the ulnar veins

distinctly and irregularly incrassate basally; inter-ulnar area very narrow, sparsely reticulated; axillar vein free. *Wings* slightly shorter than the elytra, broad, with the principal veins incrassate. *External genitalia* as in *N. saharica*, but the cerci shorter and thicker, and the subgenital plate more obtuse apically.

General *coloration* reddish brown. Face and lower halves of the lateral lobes of pronotum ochraceous. Elytra with some brownish spots in the discoidal area and in the apical half. Wings with the principal veins brownish. Hind femora from above ochraceous with a triangular chocolate-brown spot in the middle, and somewhat marmorated with white in the apical half; the outer area whitish, hind tibiae bluish.

♀ (paratype). Antennae distinctly flattened throughout, slightly widened basally. Frontal ridge sulcate throughout, reaching the clypeus. Elytra reaching to the hind knees; scapular area less dilated than in the male; discoidal area also moderately dilated, closed apically; interulnar area almost as broad as the discoidal, with an irregular false vein. Coloration of the same type as in the male, but the lateral lobes of pronotum are blackish-brown in their upper parts.

	♂ (type).		♀ (paratype).	
	mm.		mm.	
Length of body	11.5		18.5	
„ „ pronotum	2.5		3.75	
„ „ elytra	9.5		13.5	
„ „ hind femora	7		11	

Aïn Sefra, South Oran, 1-18.v.1913, 1 ♂, 1 ♀ (Rothschild and Hartert).

This is the third species of the curious genus *Notopleura*, two others being known also from Sahara only. The new species is nearer to *N. saharica* Krauss than to *N. pygmaea* Voss., which is the smallest of the three and strongly differs from its relatives by the imperfectly developed lateral keels of the pronotum. From *N. saharica* our species differs by the venation of the male elytra, and especially by the strongly dilated scapular and discoidal fields; the venation of the female elytra is difficult to compare without studying the specimens of *N. saharica*, as Krauss does not figure the female of his species.

It is obvious that further careful collecting of small grasshoppers of this group in the Sahara should bring many more interesting discoveries.

13. *Thalpomena coerulea* sp. n.

(Plate I, figs. 5, 6).

♀. Somewhat smaller and distinctly more slender than *Th. algeriana* (Luc.). *Antennae* distinctly longer than the head and pronotum together; the joints of their apical half three times as long as broad. *Face* slightly reclinate, with few scattered punctures; frontal ridge distinctly constricted at the fastigium, gradually widened towards the ocellum, feebly constricted below it and slightly widened towards the clypeus, which it does not reach by about one-third of the distance between ocellum and clypeus; its surface convex and coarsely punctured near the fastigium, impressed with the margins callous and strongly raised below the ocellum and down to the lower third where the margins disappear and the surface of the ridge is scarcely more raised than that of the face; lateral facial keels regularly and not strongly arched, callous. *Fastigium of the vertex* scarcely broader than the frontal ridge at its widest, strongly impressed, oval-shaped,

open in front; its margins distinctly raised, callous; foveolae of the vertex irregular, not impressed, rugosely punctured; vertex just behind the fastigium with a transverse impression; occiput with an indistinct median carinula in its fore part; eyes comparatively larger and more projecting sideways than in *Th. algeriana*, oval-shaped, quite as high as the subocular distance. Pronotum more compressed laterally than in *Th. algeriana*; the prozona almost half of the metazona, feebly, but distinctly, convex, transversely gibbulate between the sulci, which are all well developed; metazona practically flat, indistinctly subrugulose; median keel distinctly raised between the front margin and the first sulcus, obliterate between the sulci and sharp, linear in the metazona; lateral keels undeveloped, but the surface of the metazona forming distinct rounded angles with the sides; hind angle somewhat less than 90° ; lateral lobes much higher than they are long, very indistinctly rugulose, with the lower margin ascending, not sinuate. Mesopleurae and metapleurae scarcely rugulose. Pectus and legs pilose. Elytra extending well beyond the hind knees, hyaline throughout; discoidal vein well developed, sinuate, approximated apically to the radial vein but not touching it; reticulation not very dense even in the basal half, and regular in the apical third. Wings large and broad; principal veins distinctly incrassate. Hind femora moderately widened, strongly pilose.

Coloration ochraceous-brown. Face greyish, with darker marmoration. Head with dull blackish dots on the occiput, and with postocular bands of the same colour. Pronotum marmorated indistinctly with dull blackish colour. Elytra with the basal quarter darker than the rest, and with a faint suggestion of a darker submedian fascia. Wings very faintly coerulescent, almost hyaline, with the veins dark. Hind femora with two oblique blackish fasciae externally more pronounced on the upper area than on the median one; the inner side black with a narrow pale fascia just behind the middle, and another broader one before the knee; the lower inner sulcus black except a broad pale preapical fascia. Hind tibiae pale (discoloured?), with the very base black, and with two indistinct darker fasciae.

	♀
	mm.
Length of body	21.5
„ „ pronotum	4.5
„ „ elytra	22 (? the tips broken off).
„ „ hind femora	9.5
Width „ „ „	3.5

Aïn Sefra, South Oran, 1-18.v.1913, 1 ♀ (Rothschild and Hartert).

This new species differs from the only other Algerian known in so many important characters that it may be necessary to separate it generically. In fact, some of its characters do not agree with the original diagnosis of the genus (lack of lateral keels on the pronotum, not coriaceous elytra, wings without a band, etc.), but the whole complex of genera related to *Thalpomena* (*Thalpomena*, *Fortunata*, *Wernerella*) is as yet very insufficiently studied and their interrelations being very poorly understood, it would be inadvisable to describe one more genus of uncertain relationship.

Th. coerulescens has, of course, nothing to do with *Th. algeriana* var. *coeruleipennis* Fin., as that latter form differs from the typical one only in the coloration of wings, but not in the morphological characters.

14. *Sphingonotus rubescens* (Walk.).

(Plate I, figs. 1, 2).

1870. *Oedipoda rubescens* Walker, *Zoologist*, (2) v. p. 2301, no. 38.1884. *Sphingonotus coeruleans* var. *aegyptiaca* Saussure, *Prodromus Oedipod.*, p. 200, no. 3a.1910. *Sphingonotus rubescens* Kirby, *Syn. Cat. Orth.*, iii. p. 274, no. 12 (*syn. excl.* !¹).1913. || *Sphingonotus coeruleans* Bolivar, *l.c.*, p. 612, no. 17.

Aïn-Sefra, S. Oran, 1-18.v.13.

Saussure, who did not get an opportunity of studying sufficiently long series of specimens of what he called *Sphingonotus coeruleans*, came to the conclusion that this is a very widely distributed and highly variable species, and he has given names to some most striking "varieties" without considering the taxonomic value of their characters. All other authors followed him in calling any *Sphingonotus* with the hind wings coerulescent or hyaline as *S. coeruleans*, but H. Krauss and especially I. Vosseler in their studies of North African representatives of the genus have definitely found that there exist quite a number of species in this group, easily separated from each other by a number of sufficiently constant morphological characters; Vosseler has shown even that some colour characters, particularly the pattern of the elytra, are also very constant, if sometimes rather minute. Nevertheless, most authors still do not pay any attention to morphological characters and go in the identification of species of *Sphingonotus* exclusively by the coloration of the hind wings and particularly by the shape and grade of development of the dark band on the latter, which is, in fact, the most unreliable and individually variable character. As a result, almost all existing records of *S. coeruleans* outside of Europe require a most careful revision which will undoubtedly result in great and badly wanted improvements in the systematics of species confused under that name, as well as in a much better understanding of their distribution.

As regards *S. rubescens*, it has been always misidentified as *S. coeruleans* L., but it differs from that European species in a number of important and quite constant characters. Thus the median carina on the vertex is in *rubescens* usually much more developed, prozona of the pronotum comparatively shorter, its metazona more rounded behind, elytra and wings comparatively much longer than in *coeruleans*; still more important and absolutely reliable character may be found in the reticulation of the discoidal field: in *coeruleans* the discoidal vein is straight and almost parallel to the radial vein, the hind discoidal area being irregularly reticulated, while in *rubescens* that vein is distinctly curved, strongly approaching apically to the radial vein, leaving a broad hind discoidal area reticulated by subparallel transverse veinlets forming fairly regular transversely elongate cells; this type of reticulation is very like that in *S. savignyi* Sauss., though considerably less regular. The coloration of *rubescens* is characterised by the tendency of dark bands of the elytra to split up into small quadrangular spots which often are very irregularly scattered; wings are mostly perfectly hyalinous with the principal veins distinctly incrassate and blackish, as are also the veinlets in the marginal zone occupying almost half of the wings.

¹ I do not see any reason to include var. *candidus* Costa from Sardinia amongst the synonyms of *rubescens* as Kirby does.

The dimensions of *S. rubescens* are as follows :

	Type ♀ ¹	♂ ♂	♀ ♀
	mm.	mm.	mm.
Length of body	31	19-23	27-32
„ „ pronotum	5	3.5-4.5	5-6
„ „ elytra	32.5	21.5-28	29-33
„ „ wings	30	19.5-26	28-32
Width „ „	16.5	10-14.5	17-18.5
Length of hind femora	13	8.5-11	11.5-13

The range of distribution of *S. rubescens*, of course, cannot yet be defined in all its details ; I have seen it (in the British Museum collection) from the following localities : Wādy Gehnah (type) ; Sandy Plains, Mt. Sinai ; Athens, Greece ; Amman, Transjordan ; Enseli, N. Persia ; Abadeh, Persia ; Muscat, Arabia ; Hunza and Doyen, N. Kashmir ; Libyan Desert ; Teneriffe ; Canaries ; Gr. Piton, Salvage Islands.

There is no doubt that many of the records of *S. coerulans* from the desert parts of N. Africa must be referred to *S. rubescens* ; thus Vosseler (*Zool. Jahrb.*, xvi. p. 372) describes his specimens of "*S. coerulans*" from a number of localities in Algeria and Tunis so that he obviously had *rubescens* before him ; on the other hand, the specimen figured by him, which is from Sousse, Tunis, is a typical *coerulans*. Krauss (*Verh. Zool.-Bot. Ges. Wien*, 1902, p. 242) also records undoubtedly *rubescens* under the name *coerulans* from Biskra, Salahin, Ouargla, and Oued Nsa in Sahara. All specimens from the Tring Museum identified by Bolivar (*l.c.*) as *coerulans* are also typical *rubescens*.

It seems, from all these records, that *S. rubescens* replaces *coerulans* in the whole Eremian subregion, and the areas of both species partly overlap each other ; thus they occur together in Greece and in Enseli, N. Persia ; in the latter locality, however, *coerulans* is much more common than *rubescens*. I do not know any specimens of typical *coerulans* from the Eremian subregion, and believe that all previous records apply either to *rubescens* or to some other species with hyalinous wings. This may lead to the suggestion that *rubescens* is but a desert subspecies of *coerulans*, and not a distinct species, but I leave this question open until more is known about the group.

15. *Sphingonotus octofasciatus* (Serv.).

1839. *Oedipoda octofasciata* Serville, *Ins. Orth.*, p. 278, no. 10.

1870 ? *Oedipoda obscurata* Walker, *Zoologist*, (2) v. p. 2300, no. 37.

1884. *Sphingonotus kittaryi* Saussure, *Prodr. Oedip.*, pp. 197, 207, no. 17.

1888. *Sphingonotus octofasciatus* Saussure, *Addit. ad Prodr. Oedip.*, pp. 76, 79, no. 1 (*synon. excl. !*)

1910. *Sphingonotus octofasciatus* Kirby *Syn. Cat. Orth.*, iii. p. 272, no. 3.

1913. *Sphingonotus octofasciatus* Bolivar, *l.c.*, p. 612, no. 18.

Oued Nsa (Ghardaia to Guerrara), 3-5.vi.1912 ; Hammam-es-Salahin, Algeria (B.M.) ; Gafsa, Tunis (B.M.).

Saussure in 1884 quite correctly separated two species of *Sphingonotus* with red wings, one with the prozona of pronotum cristate which he rightly referred to *S. zini* Kitt., and another, without a raised carina in the prozona, described

¹ Walker says in his description (*l.c.*) that the type is a male, but mistakes of this kind are unfortunately quite usual in his writings.

by him under the name of *S. kittaryi*. Four years later, however, in "Addimenta" he made a simply astonishing muddle in the group, while he sank *zinini* as a synonym of *octofasciatus* Serv. (of which he then studied the type), including the latter in his revised key in the section with the prozona cristate. In reality, however, Serville's species has the prozona *not* cristate¹; and, therefore, it is identical not with *zinini* Kitt., but with *kittaryi* Sauss. *Sph. suschkini* Adelung, described in 1906 (*Mater. ad cognit. faunae et florae Ross.*, vii.), is identical with *zinini* Kitt., and both names are mere synonyms of *Sph. salinus* Pall. (see below, under *Oedipoda miniata* Pall.).

S. octofasciatus seems to be more widely distributed all over Eremian sub-region, while *S. salinus* is known from the Kirghiz Steppes only, where the former does not occur.

16. *Hyalorhipis calcarata* (Voss.).

1902. *Leptopternis calcarata* Vosseler, *Zoolog. Jahrb.*, xvi, p. 382, no. 50, pl. 18, figs. 9a, 9b, 10.

1913. || *Hyalorhipis canescens* Bolivar, *l.c.*, p. 611, no. 14.

N. of El-Golea, 18.v.1913.

I cannot agree with Bolivar's identification of this species, as the specimens named by him as *H. canescens* Sauss. agree much better with the detailed description and excellent figures by Vosseler than with the rather incomplete diagnosis by Saussure (*Prodr. Oedip.*, p. 89; *Mitt. Schweiz. Entom. Ges.*, viii. p. 94). The only difference of the specimens before me from Vosseler's description is in the dimensions, which are as follows:

	According to Vosseler.		In our specimens.	
	♂ mm.	♀ mm.	♂ mm.	♀ mm.
Length of body	15	21.5	17.5-20	28 (distended !)
" „ pronotum	2.5	4	3	5
" „ elytra	16.2	23	18-21	28.5
" „ hind femora	8	11	9-9.5	13

It is easy to see that the difference is in the general size only, our specimens being somewhat larger than Vosseler's types, and not in proportion; this difference may be either due to geographical variation (Vosseler's types were from Bou-Sâada, i.e. much more to the north than our specimens), or simply to individual variability, which is as yet very insufficiently known, as Vosseler had only three specimens before him and I have seen five.

It is not impossible, of course, that *calcarata* is only a western subspecies of *canescens*, originally described from Egypt and known also from Sinai, but it cannot be stated until both species are better known.

17. *Oedaleus decorus* (Germ.).

1826. *Acrydium decorum* Germar, *Fauna Insect. Europ.*, fasc. xii. pl. 17.

|| *Oedaleus nigrofasciatus* auctorum, *nec* De Geer, 1773 (!).

Although this species is not represented in the collection studied, it has been recorded from many localities in Algeria, Tunis, and Morocco, and I included it in the paper in order to establish its correct name. In fact, De Geer, in his

¹ According to Mr. N. Ikonnikon, who studied the type in Paris Museum and kindly permitted me to publish the above considerations, forming an abstract from his manuscript on *Oedipodidae* in *Faune de la Russie*.

description of *Acrydium nigrofasciatum* (*Mem. Ins.*, iii. p. 493, no. 9), says that it is from the Cape of Good Hope, and he mentions even *Gryllus docusta flavus* of Linné as a synonym.¹ All subsequent authors could not separate the South-African species from the very closely related Mediterranean one, and called them either *flavus* or, most often, *nigrofasciatus*. Quite recently, however, I have shown (*Ann. Mag. Nat. Hist.*, ser. 9, vol. ix. 1922, p. 102, no. 2) that the South-African species is distinct from the Mediterranean one, but unfortunately I, like most other Orthopterists, did not take the trouble to look up the original description by De Geer, and therefore called the South African species *O. gracilis* Sauss. It is quite obvious that in separating those two species we must apply the name *nigrofasciatus* De Geer to the Cape species and not to the Palearctic one, for which the next available name, viz. *Oedaleus decorus* Germ., should be used. In case it will be found necessary to split up *O. decorus* into subspecies (and there is no doubt that it varies considerably according to locality), it must be borne in mind that Germar described it from "*Podolia australis*."

18. *Oedipoda coerulescens coerulescens* (L.).

Mascara, vi.1922 (Dr. A. Cros).

The typical European blue-winged race of this common species seems to be almost entirely replaced in N.W. Africa by the subsp. *sulfurescens* (see below); doubtless records of subsp. *coerulescens* are from Ceuta (Bolívar, *Mem. Soc. Esp. Hist. Nat.*, viii. 1914, p. 189) and from several localities in Tripoli and Barka (Werner, *Zoolog. Jahrb., Syst.*, xxvii. 1909, p. 112). From Mascara I have seen four specimens only and three of them have got the wings pale greenish blue, i.e. of a shade somewhat intermediate between both subspecies, which is only what one would expect in the transitory zone; one male is blue-winged, though the blue colour is distinctly paler than in European specimens. Further detailed study of long series of specimens from different localities in N.W. Africa should give very interesting results with regard to the distribution of both subspecies.

19. *Oedipoda coerulescens sulfurescens* (Sauss.).

Azazga, Kabylie, 17.ix.1920 (Rothschild and Hartert); Bône, 6.ix.1896 (British Museum).

20. *Oedipoda miniata* (Pall., *nec auctor* !).

- 1771. *Gryllus miniatus* Pallas, *Reise durch versch. Prov.*, etc., p. 467, no. 49.
- 1790. || *Gryllus salinus* Gmelin, *Linné, Syst. Natur.*, i. (4), p. 2083, no. 182.
- 1820. || *Acrydium salinum* Fischer Waldh., *Entom. Imp. Ross.*, i. p. 39, no. 3, Orth. pl. 1, fig. 3.
- 1833. || *Acrydium germanicum* Costa, *Monogr. Acrid. Podism. Regni Napoli*, p. 32.
- 1836. || *Acridium germanicum* Costa, *Fauna Regni Napoli, Orth.*, p. 17.
- 1839. *Oedipoda gratiosa* Serville. *Ins. Orth.*, p. 727, no. 9.
- 1846. || *Oedipoda germanica* Fischer Waldh., *Nouv. Mém. Soc. Imp. Nat. Moscou*, viii. (Orth. Imp. Ross.), p. 278 (partim !), pl. xxii. fig. 7.
- 1848. || *Oedipoda salina* Eversmann, *Addit. ad Fisch. Waldh. Orth. Ross.*, p. 9, no. 4.
- 1849. *Oedipoda mauritanica* Lucas, *Explor. Alger.*, Zool., iii. p. 32, no. 55, Orth. pl. 4, figs. 2, 2a.
- 1852. || *Oedipoda salina* Siebold, *Stett. Ent. Ztg.*, xiii. p. 27.
- 1853. *Oedipoda gratiosa* Fieber, *Lotos*, iii. p. 124, no. 9.
- 1853. *Oedipoda fasciata* var. *C.* Fischer, *Orth. Europ.*, p. 413.

¹ This is not correct according to Stål, who examined the Linnean types (*Rcc. Orth.*, p. 126).

1882. *Oedipoda gratiosa* Brunner Watt., *Prodr. Eur. Orth.*, pp. 159, 164.
 1884. *Oedipoda gratiosa* Saussure, *Prodr. Oedip.*, pp. 148, 152, no. 6.
 1895. *Oedipoda gratiosa* Finot, *Ann. Soc. Ent. France*, lxiv. pp. 442, 444.
 1898. *Oedipoda gratiosa* Bolivar, *Ann. Sci. Porto*, v. pp. 73, 74 (sep. copy).
 1902. || *Oedipoda salina* Jacobson, *Priam. i Lozhnoset. Ross. Imp.*, pp. 189, 261.
 1922. || *Oedipoda salina* Chopard, *Faune de France, Orth.*, pp. 134, 164.

Merg, Cyrenaica, v. 1922 (E. Hartert).

The history of the synonymy of this species is extremely instructive, showing, as it does, how utterly misunderstood and misapplied some specific names given by old writers are.

Pallas has described two red-winged Acridids from the steppes along the river "Yaikum" (which is now called Ural)—*Gryllus miniatus* (for the quotation see above) and *Gryllus salinus* (*l.c.*, ii. p. 727, no. 78).

As the fauna of Orthoptera of the steppes along the river Ural is known at present better than that of many other parts of Russia and even of the Western Europe,¹ there can be no difficulty in identifying both Pallasian species. In fact, there are only three red-winged species known from that region (apart from *Celes variabilis* described from Pallas himself, and from *Calliptamus italicus* which he undoubtedly knew and which has not got a fascia on the wings), *Oedipoda gratiosa* Serv., *Sphingonotus zinini* Kitt., and *Pyrgodera armata* F.W. The latter, being a rather rare insect, remained unknown to Pallas; if he knew it, he would not fail to describe its quite unusually high crest of the pronotum. Thus, only two species remain to be compared with the Pallasian insects, and there is not the slightest doubt as to which is which. In fact, *Gryllus miniatus* of Pallas is described by that author as being of the same size, shape, and colour as *Gryllus coerulescens*, but differing in more distinctly maculated elytra and in the coloration of the hind wings, which he described very unfortunately (and not quite correctly) as "miniaceae" instead of "roseae"; anyhow, this insect cannot be anything else than *Oedipoda gratiosa* Serv., since *O. germanica* Latr., which has been regarded by the most authors as a synonym of *miniata*, is a Western European species which does not and cannot occur at Ural, being wholly unknown from Russia in Europe. As regards *Gryllus salinus* of Pallas, which has been also grossly misunderstood by some later writers who identified it either with *Bryodemus tuberculata* F. (Fischer Waldheim) or with *Oedipoda gratiosa* Serv. (Eversmann, Siebold, Jacobson,² Chopard), its description agrees in all its details with *Sphingonotus zinini* Kitt. (for synonymies of this species see under *Sph. octofasciatus* Serv.), and even its habitat ("locis aridissimis salisque") is exactly the same as I have observed myself for the latter species (*l.c.*, p. 16). Both Pallasian names ought to be, therefore, restored in their original sense, although it involves some very substantial changes in the present incorrect nomenclature.³

The area of distribution of *O. miniata* comprises the whole Eremian subregion,

¹ Owing to the investigations by Pallas, Eversmann, Kittary, and myself (see my list of the fauna in *Horae Soc. Entom. Ross.*, xxxix. 1910, pp. 359-90).

² This author made the mistake only in the main part of his book (p. 261), but in the appendix (p. 929) he corrected it in saying that *salina* Pall. is identical either with *Sphingonotus octofasciatus* or with *S. zinini*; this correction has been overlooked by all other writers.

³ I take this opportunity to restore another Pallasian species, *Gryllus tibialis* (*l.c.*, 2, p. 728, no. 78c), which is undoubtedly identical with *Acridium gibbosum* F.W. 1839 = *Cyphoporus maculatus* F.W. 1846 = *Derocorys fumeipennis* Adelung, 1906 (Uvarov, *l.c.*, p. 377), and should be called *Derocorys tibialis* Pall. (nec Fieb. 1853!).

extending even somewhat beyond it—in Spain, S. France, Italy, Greece, Macedonia, S.E. Russia; in the extreme north-west of its area *O. miniata* comes into contact with *O. germanica*, but always maintains its distinctive characters, which shows that they are quite independent species. Inhabiting such a vast area, *O. miniata* varies considerably according to locality and may be split up into several geographical races, differing principally in the shade of the coloration of hindwings and in the shape and width of their fascia, but it is not advisable to do so without a comparative study of long series of specimens from different localities.

21. *Oedipoda fuscocincta* Lucas.

Bône, 31.viii.1896, 1 ♀ (Brit. Museum).

Pronotum and head in this specimen are somewhat more rugose than they should be in the typical form; there is also a very short and irregular radial branch of the black band of wings; the disc of wings is of a bright sulphur-yellow coloration.

Var. *coelestina* n.

One female in the British Museum collection, from Cyrene in Cyrenaica, 1,700, ft. 22.x.1910 (Dr. A. F. S. Sladden), is provisionally referred to this species, but it differs from the typical form in so many important characters that I consider it necessary to describe it under the indifferent name of a variety until its true relationship to the typical form may be established after a study of additional materials.

Size and general appearance of the typical form, but the head and pronotum much more rugose. *Face* strongly rugose; frontal ridge with the margins distinctly raised and reaching the clypeus, strongly constricted below the ocellum; its surface strongly punctured, bifoveolate just below the fastigium. *Fastigium* distinctly rugulose and punctured, scarcely margined, as long as broad; temporal foveolae rotundato-triangular, their bottom rugulose. *Vertex* and occiput rugulose. *Pronotum* shorter and broader than in the typical form; its surface strongly and densely rugulose; median keel feebly raised, though more so in the prozona; metazona less than twice as long as the prozona, with the hind angle 90°; lateral lobes rugose. *Elytra* with the dark fasciae strongly marked but irregularly defined, with numerous and dense small dark spots, especially in the apical third. *Wings* with the disc of intense blue; black fascia as in the typical form, but not reaching the inner margin and with a quite short radial branch divided in two; apex hyaline with the veinlets brownish. In other respects quite similar to the typical form.

	♀
	mm.
Length of body	32
„ „ pronotum	7
„ „ elytra	30
„ „ hind femora	16

It is not impossible that this beautiful insect has something to do with *Oedipoda miniata* (= *germanica*) var. *coerulea* described by Saussure (*Prodr. Oedip.*, p. 150) from an unknown locality, but it differs from that in the coarsely rugose head and pronotum, which are described by Saussure as being sculptured in *coerulea* exactly as in *germanica*.

22. *Tmethis cisti harterti* subsp. n.

♀. Not large, but robustly built. *Fastigium* of the vertex broader than usual, feebly impressed. *Pronotum* very thick, distinctly depressed; its prozona but feebly compressed and scarcely constricted, with the median keel thick, tectiform, distinctly, but not deeply, interrupted by the sulci; the typical sulcus not deep, metazona distinctly broader than it is long, broadly rounded. *Elytra* only one-half again as long as the pronotum, extending to the apex of the fifth tergite and not reaching the hind knees by one-third of the length of femora. *Hind femora* with the upper carina strongly dilated, irregularly denticulate, excised in the apical third (as in *Oedipoda*); the lower carina also strongly dilated, broadly undulated.

Sculpturation of the exposed parts mostly granulose; metazona with some sharp lamellar, but low, carinulae; one transverse lamelliform rounded carinula at the end of the basal third of the superno-median area of hind femora, and two more just beyond the preapical incision of the latter.

General *coloration* uniformly reddish-ochraceous; antennae pale; metazona narrowly margined with pale yellow; *elytra* with a scarcely perceptible dark pattern; *wings* with the base and anal part faintly bluish; their fascia in the shape of two small brown spots in the two first sectors; the two apical lobes hyaline with the veins and veinlets brown; hind femora with the inside violaceous in the basal half, red in the rest, with a pale yellow preapical ring; hind tibiae inwardly sanguineous, outwardly reddish ochraceous with brownish dots; their spines red, brown-tipped.

♂ (paratype) differs from the female by somewhat more compressed pronotum, with the metazona more triangular; by the presence of pale yellow callous ridges on its prozona, along the upper margins of the lateral lobes; by the *elytra* extending a little beyond the hind knees; and by the wings faintly rosculent in the hind third, with the fascia fully developed, but not sharply defined.

	♀ (type)	♂ (paratype)
	mm.	mm.
Length of body	42	28
„ „ pronotum	13	9
„ „ elytra	19	21
„ „ hind femora	20	15

Type and paratype taken at Merg (Merdj in some atlases), Cyrenaica, May 1922, by Dr. E. Hartert, after whom the subspecies is named.

Vosseler (*Zool. Jahrb.*, xvi, 1902, pp. 384-7) has shown that *T. cisti* gives a great number of different forms in various parts of its vast area of distribution, some of them obviously geographical. Of course, only a study of very long series of specimens may help to distinguish more constant geographical races from individual aberrations or topographical adaptive forms (*morphae*), but I feel justified in regarding the strikingly aberrant form described above as a subspecies, peculiar to the coastal region of Cyrenaica; the form from Bir bou Rekbah, at the eastern Tunisian coast described by Vosseler (*l.c.*, p. 386; pl. 3, fig. 1) seems to represent a transition from the long-winged, heavily marked forms of Algeria to the new Cyrenaican subspecies.

23. *Pyrgomorpha conica* (Ol.).

1902. || *Pyrgomorpha cognata* Vosseler, *Zoolog. Jahrb.*, xvi. p. 388 (*ad partim? nec Krauss!*).

Biskra, iv.1908 (Rothschild); Ghardaia, 16.iv.1911; Aïn Sefra, South Oran, 1-18.v.1913 (Rothschild and Hartert).

Since *Acrydium conicum* of Olivier has been described from the south of France, it is obvious that the species of *Pyrgomorpha* from S.W. Europe should be regarded as that to which the name may only be applied; this species has been redescribed and figured so many times that it is simply astonishing that a careful systematist like Vosseler should make such a mistake in identification of his material as he did. In fact, the South-European *Pyrgomorpha conica* has got a very distinctly sinuated lower margin of pronotal lobes—exactly as Vosseler figured in what he called *P. cognata* (*l.c.*, p. 388), while his figure on the preceding page which is supposed by him to represent *P. grylloides* Latr. (= *conica* Ol.) belongs to a species quite distinct from the real *conica* and which is described below.

As regards *P. cognata* of Krauss, originally described from Senegal, its description is far too insufficient to make its separation from *conica* easy and beyond any doubt. Some of the specimens from Sahara are more slender than those from Southern Europe and their antennae are also somewhat longer, but I hesitate to identify them as *cognata*, until the type of the latter species is redescribed in more details. I am inclined to think that the meagre descriptions of *cognata* caused a good many mistakes to be made by different authors, and I regard all records of this species (except, of course, the original one) as doubtful.

24. *Pyrgomorpha vosseleri*, sp. n.

(Text-fig. 2.)

1902. || *Pyrgomorpha grylloides* Vosseler, *Zoolog. Jahrb.*, xvi. p. 387, fig. (*nec* Latr.!).

♀. About the same size as *P. conica* Ol., but less slender. *Antennae* not reaching the hind margin of the pronotum, triangular in the basal half, rounded in the rest. Face less reclinate as in *P. conica*, scarcely rugulose. *Fastigium* of the vertex, seen in profile, somewhat shorter than the length of an eye; seen from above it is shorter and more elliptical in front than in *P. conica*, not strongly and irregularly transversely rugulose, with a distinct median carinula running right across the occiput. Eyes almost twice as long as they are high. Lateral facial keels feebly sinuate, not much raised. A broad granulated fascia runs obliquely from the eye to the lower margin of the pronotum. *Pronotum* thick, not strongly rugulose; median keel linear, distinct throughout; lateral keels in the prozona practically straight, slightly divergent backwards; in the metazona they are more distant from each other and almost obliterate; hind margin of the pronotum rounded; lateral lobes with the lower margin practically straight and the hind angle obliquely truncate (see figure by Vosseler, *l.c.*, p. 387). *Mesosternal interspace* about half again as broad as it is long. *Elytra* extending a little beyond the hind knees.

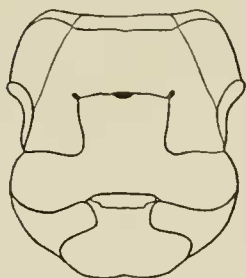


FIG. 2.—*Pyrgomorpha vosseleri*, sp. n., ♀ (type).
Sternum. $\times 6$.

General coloration green with the granulose post-ocular fascia and the lower margin of the pronotal lobes (which is also slightly granulose) pale. Antennae brownish. Abdomen with black spots on each tergite. Wings rose.

	♀ (type). ♂ (paratype).	
	mm.	mm.
Length of body	28.5	17.5
„ „ antennae	6	6
„ „ pronotum	6	3.75
„ „ elytra	22	13.5
„ „ hind femora	13	9

The type is from Hammam R'irha, 30.v.1913 (Rothschild and Hartert); the paratypes are from the same locality—3 ♀♀ and 1 ♂—and as follows: Saïda, Oran, 1 ♀, 22.v.1913 (Rothschild and Hartert); Mascara, Algeria, 4 ♂♂ (A. Cros); Medeah, Algeria, 1 ♂, 1 ♀ (British Museum).

The new species is easily separated from *P. conica* by the shape of lateral lobes of the pronotum, as well as by its lateral keels being practically straight in the prozona, while they are distinctly incurved in *P. conica*, as well as by the strongly transverse mesosternal interspace which in *P. conica* is almost as broad as it is long. The carinula on the vertex and occiput, as well as the lateral keels on the metazona of pronotum, are not constant and may be either well developed or almost obliterate; it must be noticed that these characters are not constant in *P. conica* as well. The coloration of the new species is liable to variations of the same kind as in *P. conica* and in other species of the genus, and both green and grey (or brown) forms are represented, though of the latter I know three males only, the rest of the paratypes belonging to the green form.

As regards the distribution of this species, the following localities given by Vosseler (*l.c.*, p. 387) may be added to those recorded above: Perrégaux, Hammam bou Hadjar, Er Rachel, Rio Salado, Saïda, Ain Sefra, Medeah. There is no doubt that many of the other records of *P. conica* must be also referred to *P. vosseleri*, but it is impossible to decide which ones.

I have much pleasure in naming this well-marked new species after Dr. J. Vosseler, whose work on the Orthoptera of Algeria and Tunisia is a model of systematical and ecological study.

25. *Dericorys albidula* (Serv.).

1839. *Dericorys albidula* Serville, *Ins. Orth.*, p. 639, no. 1.

1889. *Derocorystes curvipes* Redtenbacher, *Wien. Ent. Ztg.*, viii. p. 29.

1913. *Dericorys albidula* I. Bolivar, *Novit. Zool.*, xx. p. 613.

Sands of El-Arich, S.W. of Touggourt, 8-9.vi.1912, 1 ♀ (Hartert).

D. albidula is undoubtedly synonymous with *D. curvipes*, as the characters indicated by Bolivar (*l.c.*) as separating them are obviously of no value. The species is distributed from Transcaspia and Persian Gulf (Fao; British Museum), through Sinai (Krauss, in *Verh. Natur. Ver. Karlsruhe*, xxi. pp. 32-4, figs. 3, 4) and Egypt (Serville's type) right across the Sahara.

26. *Thisoecetrus littoralis charpentieri* (Stål).

1873. *Pezotettix (Euprepocnemis) charpentieri* Stål, *Rec. Orth.*, i. p. 75, no. 3.

1876. *Euprepocnemis charpentieri* Stål, *Bih. Sven. Akad.*, iv. 5, p. 15, no. 4.

Tunis (Stockholm Museum; the types of Stål).

Owing to the kindness of Prof. Y. Sjöstedt I have been able to study the actual

types of Stål's species, with the result that I believe it to represent a well-defined Tunisian subspecies of *Th. littoralis* Ramb. which occurs in its typical form in the S.E. of Spain. At the same time it is obvious that Stål's insect is different subspecifically from the Algerian representatives of the species which have been incorrectly called by I. Bolivar (*Bol. Soc. Esp. Hist. Nat.*, 1908, p. 328) *Th. charpentieri* (*nec* Stål!). In fact, the true *charpentieri* St. from Tunis¹ has got a much narrower vertex and still more irregular lateral keels of the pronotum than the insect described under that name by Bolivar; the disc of the prozona in the true *charpentieri* is distinctly punctured, while it is perfectly smooth both in the typical *littoralis* and in the insect described by Bolivar, which latter must receive a new name.

27. *Thisoecetrus littoralis bolivari*, subsp. n.

1908. || *Thisoecetrus charpentieri* I. Bolivar, *Bol. Soc. Esp. Hist. Nat.*, p. 328 (*nec* Stål, 1873!).

Biskra, hills north of the town, 22.ii.1895, 1 ♂, 1 ♀ (A. E. Eaton: British Museum).

To this subspecies must be, probably, referred most of the existing records of *Th. littoralis* from Algeria. I. Bolivar (*l.c.*) has been inclined to include in it also the representatives of the species from Egypt and Persia, but it seems that a careful study of series of this species from the eastern Mediterranean countries will make it necessary to separate several more subspecies.

I do not give a description of the new subspecies, because it has been very fittingly characterised by Bolivar, and its principal distinctive features are also quite obvious from the key to the subspecies of *Th. littoralis* given below.

Dimensions of the types are as follows:

	♂ (type)	♀ (paratype)
	mm.	mm.
Length of body	28	35
„ „ pronotum	5.5	7
„ „ elytra	23	28
„ „ hind femora	15	18.5

28. *Thisoecetrus littoralis harterti* Bol.

1913. *Thisoecetrus harterti* I. Bolivar, *Novit. Zool.*, xx. p. 614, no. 28.

Biskra, 4 ♀♀ (Rothschild and Hartert).

The original type of Bolivar's description² is before me, and three more females are exactly like it. It is very strange that Bolivar did not compare it with what he called *charpentieri*, i.e. my *bolivari*, but with the Spanish *littoralis*; still more incomprehensible is that he should say that the latter has been many times recorded from Algeria, while he himself stated positively in 1908 (*l.c.*) that *littoralis* does not occur in Algeria and all records must be referred to his "*charpentieri*."

¹ Prof. Sjöstedt has sent me one male and one female both from Tunis; only the female bears the original label by Stål, but it cannot be considered the holotype of the species, because Stål's description is based on a male; I have, therefore, selected the male specimen studied by me as the holotype.

² It is a female, as indicated in description, and not a male, as it is stated, obviously by a misprint, in the table of measurements.

I believe that the subspecies *harterti* is peculiar to the Sahara, which is evidenced by its very pale general coloration. The fact that this subspecies and *bolivari* are both known from Biskra may be explained by the geographical position of Biskra on the very dividing line between the mountainous and hilly Algeria populated by *bolivari* and the desert where it is replaced by *harterti*. Indeed, the types of *bolivari* have been taken by Mr. Eaton on the hills north of Biskra, while those of *harterti*, though not bearing a detailed label, near the town and southwards from it.

29. *Thisoecetrus littoralis minuta* Uvar.

1921. *Thisoecetrus littoralis* var. *minuta* Uvarov, *Trans. Ent. Soc. London*, p. 123, no. 1a.

I am inclined now to regard this minute form as a distinct subspecies, known so far only from Bône, Algeria.

The four subspecies of *Th. littoralis* known to me from N.W. Africa and S. Spain may be separated by the following key :

1 (8). Distance between the eyes at least half again as broad as the distance between the first and the second pronotal sulci. Prozona of the pronotum smooth; the lateral keels straight, or practically so, gradually divergent backwards.

2 (3). Distance between the eyes twice as broad as the distance between the first and the second sulci. General form more slender; elytra extending distinctly beyond the hind knees. Hind femora elongated, slender. Hind tibiae with 15-17 external and 12-14 internal spines.—S. Spain.

1. *littoralis* (Ramb.)

3 (2). Distance between the eyes about half again as broad as the distance between first and the second sulci of pronotum. General form less slender; elytra just reaching the hind knees or scarcely longer. Hind femora thick and short. Hind tibiae with 12-14 external and 11-13 internal spines.

4 (7). Hind tibiae in the apical half red or reddish all over. General coloration not faded. Hind femora with the transverse fasciae more developed. Small and middle-sized insects.

5 (6). Very small (♂ 16 mm.; ♀ 27 mm.). Coloration vivid. Elytra just reaching the hind knees.—Bône, Algeria.

2. *minuta* Uv.

6 (5). Of middle size (♂ 28 mm.; ♀ 35 mm.). Coloration somewhat less vivid. Elytra extending a little beyond the hind knees.—Biskra, Algeria.

3. *bolivari* subsp. n.

7 (4). Hind tibiae pale, only the inner side near the apex somewhat reddish. General coloration very pale. Hind femora with but narrow dark linear spots along the upper carina of the externomedian area. Size large (♀ 50 mm.).—Sahara.

4. *harterti* Bol.

8 (1). Distance between the eyes not or scarcely broader than the distance between the first and second sulci of the pronotum. Prozona of the pronotum distinctly punctured; the lateral keels very irregular, strongly punctured, subparallel and distinctly convex before the first sulcus, distinctly displaced nearer to the middle and parallel between the first and the second sulci, divergent between the second and the third sulci.—Tunis.

5. *charpentieri* (St.).

30. *Schistocerca gregaria* (Forsk.) ph. *flaviventris* (Burm.).

1838. *Acridium flaviventre* Burmeister, *Handb. Entom.*, p. 631.

1922. *Schistocerca gregaria* ph. *flaviventris* Uvarov, *Bull. Entom. Res.*, xiv. (in print).

Ain Guettara, north of In Salah, 12-14. iv. 1912 (Hartert and Hilg.), 1 ♀.

The only specimen of this common migratory locust of Algeria proved to be of an extraordinary interest, as it belongs not to the ordinary swarming phase¹ of the species, but to the single-living ph. *flaviventris* (Burm.). A full description of this phase is given by me in a special paper (*l.c.*) dealing with some migratory locusts.

EXPLANATION OF THE PLATE

1. *Sphingonotus rubescens* (Walk.), male from Ain Sefra. × 6.
2. *Sphingonotus rubescens* (Walk.), male from Ain Sefra. × 3.
3. *Notopleura rothschildi* sp. n., male. × 4.
4. *Notopleura rothschildi* sp. n., female. × 4.
- 5, 6. *Thalpomena coerulescens* sp. n., female. × 6.
- 7, 8, 9. *Iris deserti* sp. n., female. × 4.
10. *Iris deserti* sp. n., male. × 4.
11. *Iris oratoria* (L.), male from Batna, Algeria. × 4.